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Varieties of Annual Forage Crops for Alberta 1987

Prepared by the Alberta Forage Crops Advisory Committee

The Alberta Forage Crops Advisory Committee coordinates the findings of the various research institutions, and in this publication describes those varieties suited for production in Alberta.

Principles of annual hay and silage production

- **The selection of the right crop for your area and end use is usually more important than the choice of any one particular variety.**
- Seeding rates of cereals for forage production are higher than cereals for grain production.
- Peas, faba beans, corn, and sunflowers need to be seeded as early as possible.
- When seeding peas and faba beans inoculate seed just prior to seeding with an appropriate viable rhizobium inoculant, using a sticking agent, for optimum N fixation.
- Soil nitrogen levels directly affect protein content in cereal crops.
- The protein content of cereal x pulse mixtures will be intermediate to that of pure stands, depending on the ratio of cereal and pulse in the mixture.
- Cereals for forage use should be planted approximately two weeks later than for normal grain production.
- When planting cereal x pulse mixtures the cereal seeding rate should be reduced to less than one half the normal rate.
- The quality of cereal forage is affected by stage of development at harvest. Protein content decreases as the crop matures.
- Cereals produce their highest total forage and protein yields per acre when harvested in the dough stage.
- As oats, triticale and rye mature from the boot stage to the firm dough stage, protein content declines and fibre levels increase. Fibre levels of barley do not increase as rapidly as other cereals.
- Nitrate toxicity - Any annual crop, but particularly cereals, can develop a danger of nitrate toxicity if soil nitrogen levels are high and the crop is under stress.

Tear out and retain for future reference

RECOMMENDED ANNUAL CROPS FOR HAY OR SILAGE

Crop	Variety	Seeding Rates (lb/ac)	Areas	Main Uses	Comments
Oats	Foothill*	65-115	3,4	silage, green feed	highest yielding in area 4 tends to lodge
	Cascade	65-115	3,4	silage, green feed	slightly lower yielding, lodging resistant
	Harmon	65-115	2,3,4	silage, green feed	
	Frazer*	65-115	2,3,4	silage, green feed	
	Grizzly	65-115	2,3,4	silage, green feed	late maturing
	Laurent*	65-115	2,3,4	silage, green feed	highest yielding in area 3
Barley	Johnson	75-110	1,2,3,4, irr.	silage, green feed	6 row feed, smooth awn, highest yielding, tends to lodge
	Galt	75-110	1,2, irr.	silage	6 row feed, semi-smooth awn
	Empress	75-110	3,4	silage	6 row feed, rough awn
	Klages	75-110	3,4	silage	2 row malt, rough awn
	Klondike	75-110	1,2, irr.	silage, green feed	6 row feed, smooth awn
Triticale	Triwell	85-150	2,3,4	silage	lodging resistant
	Carman	86-150	2,3,4	silage	lodging resistant
Spring Rye	Gazelle	85-140	1,2	green feed	tallest crop in area 1,2
Field peas	Century	160	3,4	silage	large seeded, intermediate yields, somewhat taller
	Tara*	150	3,4	silage	highest yielding in area 3
	Trapper	120	3,4, irr.	silage	highest yielding under irr.
Faba beans	Aladin	180	3,4, irr.	silage	large seed size
	Outlook	150	3,4, irr.	silage	medium seed size
	Pegasus*	150	3,4, irr.	silage	medium seed size
Sunflowers	Confectionery types	30	1,2, irr.	silage	yields are highly variable,
Corn	+	+	irr.	silage	highest yielding crop under irr. on brown soils

* Seed supply limited

+ For variety recommendations and seeding rates, see the Alberta Corn Committee Hybrid Recommendations leaflet.

Crop Comparisons

Oats - the highest forage yielding cereal in areas 3 and 4. Lodging is a problem on fertile soils in wet years. Not preferred over barley for silage in areas 1 and 2 and under irrigation. Best seeded in Mid- to late May.

Barley - Has the highest quality among cereal crops. Yields less than oats in areas 3 and 4. Highest forage yielding cereal in areas 1 and 2. Under irrigation lodging may be a problem. Smooth awned types should be used for greenfeed. In central and northern Alberta, barley silage yields are highest from mid May to early June seeding.

Triticale - On grey wooded soils in area 4 dry matter yield is second to oats. Lodging is not usually a problem. Late maturing. Seed as early as possible in May in Area 4. Rough awns restrict usage for green feed.

Spring Rye - In areas 1 and 2 yields are comparable to other cereals. Tall enough for harvesting in dry years.

Field peas - Lower in dry matter but higher in protein than cereals. In area 4 peas yield more than fababeans. Peas have a low growing habit. When they are grown alone vine lifters and rigid pick-up reels are recommended. Seeding rates will vary according to differences in seed size of the varieties.

Faba beans - One of the best nitrogen fixers among annual crops. Later maturing, lower in dry matter but higher in protein than cereals. In most of area 3 faba beans yield more than field peas. Growth habit upright and resistant to lodging.

Corn - In high heat regions (minimum 2100 corn heat units) of the province where proper irrigation is possible, corn produces the most dry matter and energy per acre. However, in cooler regions of the province corn will not mature in time. The resulting dry matter percentage is too low to permit proper ensiling. Corn that has not reached maturity by first frost is very susceptible to lodging. Growing corn and making corn silage requires specialized equipment.

Sunflowers - In parts of areas 1 and 2 where corn is not well adapted, sunflowers are capable of producing a lot of silage. This crop cannot be cut for green feed. Yields are highly variable. In areas 3 and 4 late maturity restricts use. As with corn, specialized equipment is required.

AVERAGE DRY MATTER YIELDS (PERCENT OF OATS) AND PROTEIN CONTENT

		Area 1		Area 2	Area 3		Area 4
Crop	Aver. %* Crude Protein	Brooks Bigstone	Brooks (Irrigated)	Standard (Irrigated)	Lacombe Olds-Cremona Westlock	Vegreville (solonetz)	Bluffton Rocky Mtn. House Smoky Lake
Oats	8.9	100	100	100	100	100	100
Barley	10.2	117	130	105	77	80	72
Spring Rye	9.6	101	108	112	71	94	68
Triticale	9.7	102	114	111	81	96	75
Field peas	17.9	75	83	95	55	78	69
Faba beans	19.1	45	82	77	62	50	62
Corn	8.5	45	172	84	80	61	71
Sunflowers	11.6	109	163	137	88	136	91
Oat Yield lb/acre		4340	7920	7720	8949	5295	6281

*Average of Brooks and Lacombe based research.

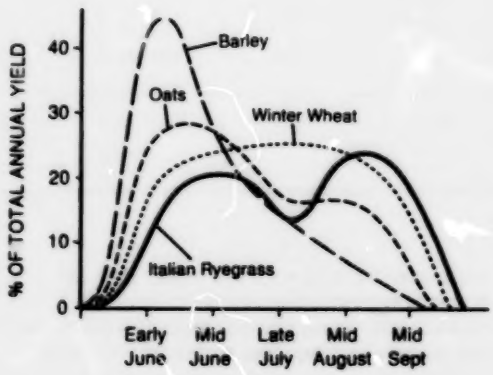
Principles of annual pasture production

- Select the crop to be used first, then choose the variety.
- Annual pastures are best suited for emergency and short-term pastures.
- If properly managed, annuals can extend the grazing season.
- Yearly costs over the long term are higher than for perennial pastures.
- To minimize trampling losses, graze before they are in shot blade stage and when soil is firm.
- Nitrate toxicity - Annual pastures can also pose a danger of nitrate toxicity if soil nitrogen levels are high and the crop is under stress.

RECOMMENDED ANNUAL PASTURE VARIETIES AND COMPARATIVE SPRING SEEDED YIELDS (% OF OATS)

Crop	Seeding Rate (lb/ac)	Variety	Area	Simulated Pasture Yield (Multiple cuts) Brooks Irrigated	Lacombe Area 3	Bluffton Area 4	Comments
Oats	65-115	same as for silage	2,3,4	100	100	100	Emergency pasture, highest yield in area 4
Barley	75-110	same as for silage	1,2,3	129	65	65	Earliest spring seeded summer pasture
Fall rye (fall seeded)	85-140	Kodiak Musketeer	1,2,3,4 1,2,3,4	-	-	-	Fall seeded early spring pasture
Fall rye (spring seeded)	120	Kodiak Musketeer	3,4 3,4	137	126	63	Requires good moisture
Winter wheat (spring seeded)	120	Norstar	3, irr.	180	135	55	High yielding summer pasture. Do not overwinter or seed near fall seeded winter wheat
Winter triticale (spring seeded)	120	Wintri	irr.	150	-	-	High yielding pasture for winter wheat (grain) areas
Rye grasses	10	Lemtal Maris Ledger Promenade	3, irr. 3, irr. 3	186	150	67	Best late summer and fall pasture
Forage kale (single cut in late fall only)	10	Maris Kestrel	3, irr.	210	384	-	Single late fall grazing only, requires intensive management
Oat Yield (lb/acre)				4900	2980	1880	

Seasonal Distribution of Pasture Yields (% of total) of four spring seeded crops at Lacombe, Brooks and Bluffton. 1979-83. Caution: lines do not represent actual yields. Wheat, spring rye and triticale behave similarly to barley. Fall rye and winter triticale behave similarly to winter wheat.



Notes on annual pasture crops

- Barley and oats produce pasture early in the season. Oats provides some regrowth for later use.
- Winter wheat, fall rye and winter triticale produce less of their total yield early in the season but regrow well throughout the summer.
- Italian rye grass is very slow establishing itself. Weeds can be a problem. It regrows well in late summer and early fall.
- Forage kale should be pastured in late fall after frost. Forage kale requires intensive management. Livestock should be gradually introduced to the pasture. Mineral supplementation is essential. Strip grazing will reduce wastage.

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